HEATING PRODUCTS

HEATING TAPES

Safety Information
Heating Tape is designed with function, reliability, and safety in mind. It is the user's responsibility to install it in conformance with local electrical codes.

Warnings
To avoid personal injury:
- Do not use in the presence of flammable or combustible materials, fire or explosion may result.
- Never immerse the heating tape in water or any other fluid.
- Never connect heating tapes to a controller's output without assembling the two separable plug halves (if applicable).
- Refer servicing to qualified personnel only.
- Never handle the heating tape while it is in operation.
- Always disconnect the heating tape from the power source and allow to cool prior to handling.

Operation
Your Heating Tape is designed to provide a long and efficient service life. Overheating, contamination and misuse will greatly reduce the life of the heating tape. Your heating tape should only be used in dry, non-hazardous areas.

Caution
To avoid damage to the Heating Tape:
- Never operate the heating tape without a temperature control device. Failure to use such a device may result in process damage or heating tape failure.
- Never lift or pull the heating tape by its lead wires.
- Never operate the heating tape without an appropriate heat sink.
- Never operate the heating tape at temperatures above the maximum exposure temperature. (See chart on next page.)
- Never cut, splice, punch holes in or otherwise modify the heating tape.
- Never place heating tape plug (if applicable) on heating surface.
- Never allow foreign substances to bake on the heating tape. If spillage of foreign matter occurs, disconnect the heating tape from the power source and allow to cool. After cooling, wipe the foreign matter off the heating tape.

Installation
Prior to installing your Heating Tape:
- Check for suspected damage to the heating tape (for example: rips, punctures, etc.).
- Check the surface to be heated to ensure it is free of all jagged or sharp edges, weld spatter, rust, oil, loose paint, etc.

After you have installed your Heating Tape:
- Ensure the entire surface area of the heating tape is in full contact with the surface. If air gaps are present between the surface to be heated and the heating tape, heat transfer may be reduced. The reduced heat transfer could result in overheating of the heating tape. To ensure firm contact use our AAT (Aluminum Adhesive Tape), PSAT (fibreglass tape), or equivalent.
- Ensure the heating tape is not wrapped over itself, another heater, or any obstruction it is not designed to heat.

Installing your Heating Tape onto the surface:
The flexible heating tape can be installed on both a flat and/or curved surface.
For a flat surface, lay the heating tape onto the surface to be heated. For a curved surface, wrap the heating tape onto the surface to be heated. The length of one entire side of the heating tape must be in full contact with the surface. Ensure the heating tape is not kinked, twisted, or any portion of the tape hanging free from the surface.

Your heating tape can be attached to the surface by using:
- Mechanical clamping devices which cause no damage to the heating tape.
- AAT (aluminum tape), PSAT (fibreglass tape), or equivalent.

Installing your Heating Tape to a power source:
- You **MUST** use a method of controlling or limiting the temperature of the heating tape. Examples of recommended controllers are BriskHeat's BriskONE (PID) controller, TP (time percentage) controller, or TS (thermostat) controller. See pages 8-5 to 8-7 for options.
- Your heating tape is designed to operate at a specific voltage. Please refer to the lead wire label for the rated voltage, current and wattage information. Failure to operate the heating tape at the specified rating could result in damage to the

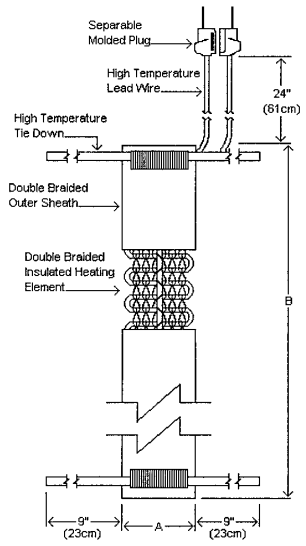
heating tape, the surface being heated, the product being processed or personal injury.

- If no plug is provided with the heating tape, then either directly connect the lead wires to the controller's output power source or connect the lead wires to a plug which meets the heating tapes voltage and amperage requirements and is compatible with controller.
- Your heating tape is non-polarized, so either of the 2 wires may be hooked up to hot or neutral. The grounded lead on a grounded heating tape is identified with either a BriskHeat@ label or a green marking.
- All electrical connections must be made by qualified personnel and in accordance with all applicable codes and regulations.
- Ensure the heating tape is protected by a properly sized circuit breaker or fuse.
- Use of ground fault interrupters is highly recommended and may be required by code.

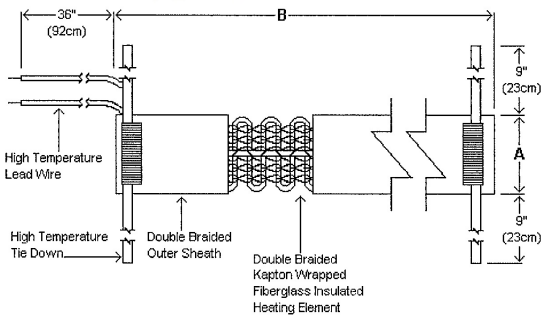
FIBREGLASS HEAVY INSULATED HEATING TAPES

Bakeout tapes suitable for use on conductive surfaces up to a maximum continuous temperature of **482ºC (900ºF)** for fibreglass and **760ºC (1400ºF)** for Samox® insulation.

- 'A' = 13mm (½Inch) or 25mm (1 inch) wide. •High temperature tie downs on both ends.
- Greater than 150 W (13mm) & 300 W (25mm) per linear metre.
- 120 V AC with 60cm long high temperature lead wire and moulded plug. Enquire about 240V AC
- Available from stock in Guelph warehouse.



Width 'A'		Length 'B'		Total Watts Fibre Glass	Order Part No.	Price US$ Fibre Glass
mm	inches	mm	inches			
13	½	610	24	105	BH610105	$40
13	½	1220	48	210	BH122210	$50
13	½	1830	72	310	BH183310	$64
13	½	2440	96	420	BH244420	$79
13	½	3050	120	520	BH305520	$98
25	1	610	24	210	BH610210	$64
25	1	1220	48	420	BH122420	$74
25	1	1830	72	620	BH183620	$91
25	1	2440	96	830	BH244830	$108
25	1	3050	120	1045	BH3051045	$118



Width 'A'		Length 'B'		Total Watts Samox	Order Part No.	Price US$ FG / Samox
mm	inches	mm	inches			
13	½	610	24	160	BS610160	$37
13	½	1220	48	310	BS122310	$42
13	½	1830	72	470	BS183470	$59
13	½	2440	96	620	BS244620	$69
25	1	610	24	310	BS610310	$40
25	1	1220	48	620	BS122620	$54
25	1	1830	72	940	BS183940H*	$69
25	1	2440	96	1250	BS2441250H*	$95

*H version is available only for 230/240 Volt operation, no plug is included

KAPTON™ INSULATED FIBREGLASS HEATING TAPE

Bakeout tapes suitable for use on conductive surfaces up to a maximum continuous temperature of **232ºC (450ºF)**, and harsh environmental conditions.

- 'A' = 25mm (1 inch) wide.
- High temperature tie downs on both ends.
- Greater than 200 Watts per linear metre.
- 120 V AC with 92cm long high temperature lead wire with bare ends for connection to customer terminal block. (240 V also available)
- Available from stock in Guelph warehouse.

Length 'B'		Total Watts	Order Part No.	Price US$
mm	inches			
610	24	144	BK061144	$59.00
1220	48	288	BK122288	$83.00
1830	72	432	BK183432	$98.00
2440	96	576	BK244576	$110.00
3050	120	720	BK305720	$134.00
3660	144	864	BK366864	$152.00

BriskHeat® Heating Mantles for Laboratory Flasks

BriskHeat ® Heating Mantles offer uniform heat distribution for round-bottom flasks. Whether the need is a self-standing mantle, a mantle to fit in a basket ring stand, or a full coverage zippered mantle, BriskHeat ® Heating Mantles provide the solution.

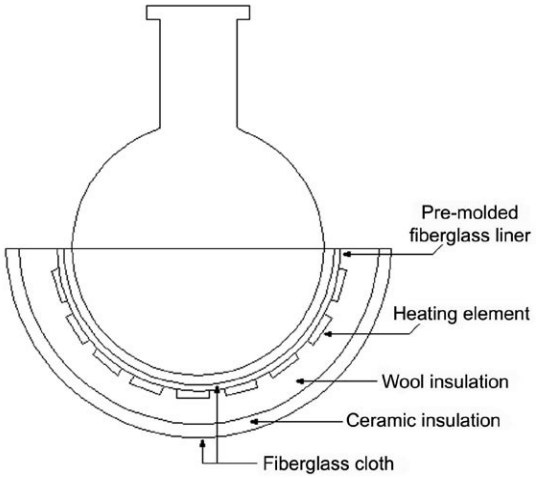
Product Highlights

- **Moulded to Fit Round-Bottom Flasks**
- **Fits in a Basket Ring Stand or Table Top**
- **Temperatures up to 900°F (482°C)**
- **Low Watt Density**

LM Lower Hemispherical Heating Mantles

Product Highlights

- Ideal for use with basket ring stand
- Temperatures up to 842º F (450º C)
- 120VAC model includes 3" (76mm) lead wire with NEMA L1-15R connector and a 4 foot (1.2m) power adaptor cord with NEMA 1-15 plug.
- 240VAC model includes 3" (76mm) lead wire with no plug
- CSA Approval



Ordering Information

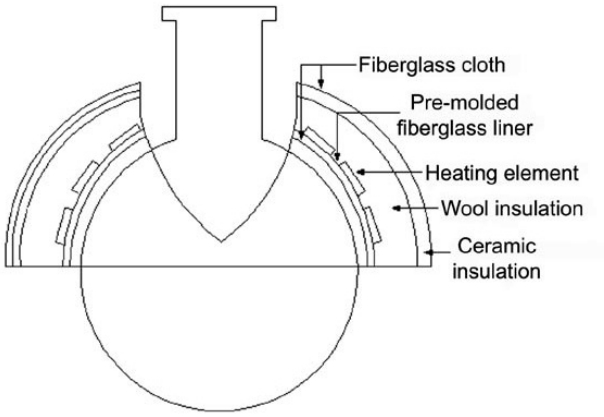
Size ml	Total Watts	Part Number		US $ Price
		120VAC	240VAC	
50	60	LM0050-L	LM0050-H	$170
100	80	LM0100-L	LM0100-H	$190
125	80	LM0125-L	LM0125-H	$193
200	100	LM0200-L	LM0200-H	$200
250	180	LM0250-L	LM0250-H	$205
500	270	LM0500-L	LM0500-H	$212
1000	380	LM1000-L	LM1000-H	$250
2000	500	LM2000-L	LM2000-H	$282
3000	500	LM3000-L	LM3000-H	$315
5000	600	LM5000-L	LM5000-H	$392
12000	1300	LM12000-L	LM12000-H	$783

IMPORTANT: Temperature controller is required for this product. See pages 8-5 to 8-7 for options.

UM Upper Hemispherical Heating Mantles

Product Highlights

- Opening holds 1, 2, or 3 neck flasks on ring stand
- Ideal for preventing vapor condensation in upper half of flask
- 120VAC model includes 3" (76mm) lead wire with NEMA L1-15R connector and a 4 foot (1.2m) power adaptor cord with NEMA 1-15 plug.
- 240VAC model includes 3" (76mm) lead wire with no plug
- CSA Approval



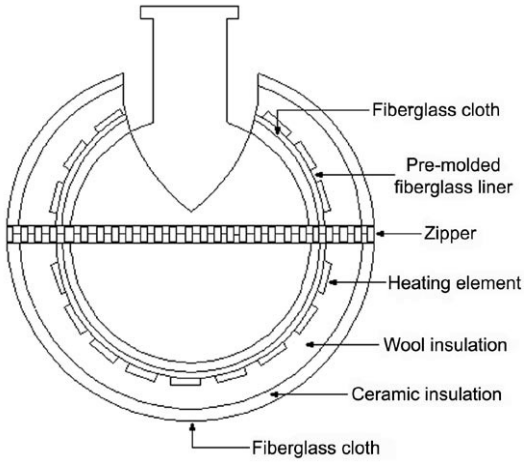
Ordering Information

Size ml	Total Watts	Part Number		US $ Price
		120VAC	240VAC	
250	140	UM0250-L	UM0250-H	$238
500	140	UM0500-L	UM0500-H	$245
1000	140	UM1000-L	UM1000-H	$281
2000	200	UM2000-L	UM2000-H	$314
3000	200	UM3000-L	UM3000-H	$346
5000	300	UM5000-L	UM5000-H	$427

SM Spherical Heating Mantles

Product Highlights

- Opening holds 1, 2, or 3 neck flasks on ring stand
- Zipper fastens upper and lower halves together
- 120VAC model includes 3" (76mm) lead wire with NEMA L1-15R connector and a 4 foot (1.2m) power adaptor cord with NEMA 1-15
- 240VAC model includes 3" (76mm) lead wire with no plug
- CSA Approval



Ordering Information

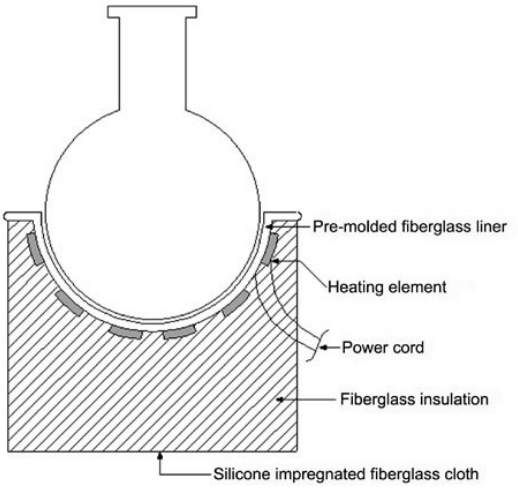
Size ml	Total Watts		Part Number		US $ Price
	upper	lower	120VAC	240VAC	
500	0	270	SM0500-L	SM0500-H	$370
1000	140	380	SM1000-L	SM1000-H	$666
2000	200	500	SM2000-L	SM2000-H	$745

IMPORTANT: Temperature controller is required for this product. See pages 8-5 to 8-6 for options.

TM Table Top Heating Mantles

Product Highlights

- Self-supporting, can be placed directly on counter top
- Easy viewing of flask contents
- Includes 6 feet (1.8m) cord with either NEMA 1-15 plug, for 120VAC or NEMA 6-15 plug for 240 VAC.
- CSA Approval



Ordering Information

Size ml	Total Watts	Part Number		US $ Price
		120VAC	240VAC	
50	52	TM0050-L	TM0050-H	$183
100	70	TM0100-L	TM0100-H	$202
250	143	TM0250-L	TM0250-H	$215
500	210	TM0500-L	TM0500-H	$243
1000	377	TM1000-L	TM1000-H	$397
2000	520	TM2000-L	TM2000-H	$426
3000	550	TM3000-L	TM3000-H	$457
5000	620	TM5000-L	TM5000-H	$535

IMPORTANT: Temperature controller is required for this product. See pages 8-5 to 8-7 for options.

POWERSTAT Model 117C Variable Transformer operates from 120 volt lines. It features POWERKOTE coils. The rated output for constant current loads is 12 amperes for the 117C. For a constant impedance load the maximum rated output current at line voltage is increased to 15 amperes for the 117C.
Regulation for the 117C operating at full load current, will be within ± 1 volt at any voltage setting, and less at lower load currents. The 117C has a dial graduated in volts, and has input cord·plug set, output receptacle, switch and fuse and is connected for clockwise knob rotation.117C output voltage is limited to line voltage.

Model 117C, 0 to 120 VAC, 12 Amps

Model 117C Powerstat®

TS0 Portable Bulb and Capillary Temperature Controller

Features:
- 120 or 240VAC
- 15 amps
- 4-foot copper bulb and capillary
- Compact portable design
- Plug-in operation
- CSA approval

Model TS0 Temperature controller

TS0 portable bulb and capillary temperature controller

TP0 Portable Time Percentage Dial Temperature Controller

Features:
- 120 or 240VAC
- 15 amps
- Compact portable design
- Plug-in operation
- CSA approval

TP0 series controller varies the proportion (length) of time a heater is in the “on” or “off” heating mode. The heating application will determine the actual percentage set point required. The controller does not use a temperature sensor and therefore satisfactory operation requires occasional supervision under changing load conditions.

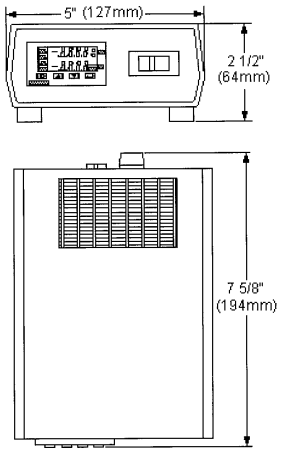
Model TP0 Temperature controller

TP0 portable time percentage dial temperature controller

Ordering Information:

Part Number	Description	Price US $
SE117C	0-120V, 12 A Powerstat®	$395
TS0-250L	Portable Bulb & Capillary Controller, 60 to 250ºF (16 to 121ºC) 120 VAC	$135
TS0-550L	Portable Bulb & Capillary Controller, 150 to 550ºF (66 to 288ºC) 120 VAC	$135
TS0-250H	Portable Bulb & Capillary Controller, 60 to 250ºF (16 to 121ºC) 240 VAC	$135
TS0-550H	Portable Bulb & Capillary Controller, 150 to 550ºF (66 to 288ºC) 240 VAC	$135
TP0-941L	Portable Percentage Dial Controller, 5 to 100%, 120VAC	$130
TP0-942H	Portable Percentage Dial Controller, 5 to 100%, 240VAC	$130

BriskONE Thermocouple PID Controller



Specifications:
- Accuracy: ±0.25% of reading ±1 least significant digit.
- Operating voltage 120, 240VAC, +10%-15%, 50-400Hz.
- Rated 15a @ 120v, 10a @ 240v
- Operating range 32-1400°F (0-760°C)
- Maximum controller exposure temperature 14°F (-10°C) 122°F (50°C)
- Table top design with optional unistrut mounting bracket.
- Fused output.
- Type J thermocouple mini connector input*
- Dual display shows set point and actual process temperature
- Programmable to either °C or °F.
- Fuzzy logic reduces overshoot on startup.
- Automatic tuning of PID parameters.
- Heater break protection.
- Sensor break protection with average output option to continue process heating.
- Auto/manual control ability.
- 16 segment ramp/soak
- Compact size.
- Simple 4 key user control.
- User programmable alarm types.
- Program security lock levels.
- 6 foot (1.8m) input power cord
  120VAC - NEMA 5-15 plug
  240VAC - Bare wire end
- Includes matein AMP Mate-N-Lock power connector
- Optional unistrut mounting bracket

* *Thermocouple sold separately.*

Applications:
The BriskONE controllers are designed for indoor, general purpose use, for remote or portable applications, which require precise automatic control of heaters. Typical applications include temperature control of small tanks, laboratory heaters, semiconductor processes, drums, pipes, freeze protection, process control, and moisture protection systems, or other applications requiring precise control.

Approvals:
- CSA approved

Ordering Information

Controller

Part Number	Voltage	Amps	Price US $
BriskONE1	120VAC	15	$670
BriskONE2	240VAC	10	$670

Accessories:

Part Number	Description	Price US $
40890-03	Owner's manual	$25
40911	120VAC input power cord with 2p 3w plug	$13
40911-02	240VAC input power cord with 2p 3w plug	$22
40030	15 Amp fuse	$2
40030-01	10 Amp fuse	$2
40909-01	Unistrut mounting bracket	$45
PB1101-BR	120VAC output adapter cord*	$48
PB4201-ER	240VAC output adapter cord*	$87

*Adapter 3 pole mate & lock plug to standard 2 pole 3 wire connector.

Available Accessories:
Thermocouples
J style thermocouple 24 AWG fibreglass insulated wire with mini connector.

Part Number	Length	Price Cdn$
TAJN05-AA	5	$45.00
TAJN10-AA	10	$52.00
TAJN25-AA	25	$87.00

vecstar FURNACES

Welcome to Vecstar Furnaces, one of the UK's leading suppliers of electric furnaces for laboratory, research and industrial applications. With over 20 years experience in developing, manufacturing and supporting laboratory and light industry, Vecstar have established a comprehensive global distributor network and a reputation for providing quality and cost effective solutions for our varied customer base.

Choose from a wide range, comprising of over 60 electric furnaces, including

- muffle furnaces
- chamber furnaces
- dental / economy furnaces
- ashing furnaces
- heat treatment furnaces
- rapid furnaces
- tube furnaces
- fan assisted ovens
- high temperature ovens
- hot plates

Vecstar Furnaces have manufactured standard and special furnaces for a wide range of applications including aerospace, nuclear power, chemical and glass production and work closely with many educational authorities.

Muffle Furnaces 1100º C & 1200º C

A comprehensive range of durable high quality muffle furnaces offering a wide range of chamber sizes incorporating the following features.

- Wire wound ceramic muffle chamber for excellent uniformity and smooth durable inner surface
- Door opens vertically to ensure the hot plug is away from the operator at all times
- Door safety switch turns off power to the elements whenever the door is opened.
- Choice of digital controller (see separate information)
- Single phase power source
- High quality insulation incorporating a double skin case ensuring low outer surface temperatures
- Stainless Steel chimney
- Powder coating finish
- Typical uses: general laboratory use, e.g. education authorities, research institutes

Model		EF			LF			PF			
		1	2	3	1	2	3	1	2	3	4
Chamber size	H mm	100	120	120	100	120	120	140	205	205	305
	W mm	125	180	180	125	180	180	190	230	305	305
	D mm	150	180	355	150	180	355	560	460	460	460
External size	H mm	575	595	595	575	595	595	580	575	575	575
	W mm	400	455	455	400	455	455	440	400	400	400
	D mm	345	375	345	345	375	550	765	345	345	345
Volume (litres)		1.9	3.9	7.7	1.9	3.9	7.7	14.9	21.7	28.8	42.8
Maximum Temperature		1100º C			1200º C			1200º C			
Maximum continuous working temperature		1100º C			1150º C			1150º C			
Temperature sensor		Type 'K'			Type 'R'						
Maximum Power rating	(kW)	1.6	2	3	1.6	2	3	5.75	6	7	7
Power control		Contactor			Solid State Relay						
Over temperature protection		N/A			Thermal Fuse Standard						
Insulation Material		High Quality Low Thermal Mass Materials									
Chimney		N/A			Standard			Optional Extra			

Chamber Furnaces 1300º C

A comprehensive range of high temperature muffle and chamber furnaces with simple operation and robust construction incorporating the following features:

- Heating elements on models 1-4 are high quality resistance wire and sealed on to a refractory muffle. Models 5 & 6 are resistence wire elements supported on ceramic tubes and mounted in the roof and sides of the chamber for excellent temperature uniformity.
- Door opens vertically to ensure the hot plug is away from the operator at all times.
- Door safety switch turns off the power to the elements whenever the door is opened.
- Choice of digital controller (See separate information).
- High quality insulation incorporating a double skin case ensuring low outer surface temperatures.
- Powder coating finish.
- Typical uses, general laboratory research and light industrial.

Model MRF Chamber Furnace

Model		MRF 1	MRF 2	MRF 3	MRF 4	MRF 5	MRF 6
Chamber size	H mm	120	120	205	205	305	300
	W mm	180	180	230	305	305	450
	D mm	180	355	460	460	460	600
External size	H mm	595	595	650	650	880	880
	W mm	455	455	540	615	790	935
	D mm	375	550	655	665	665	805
Volume (litres)		3.9	7.7	21.7	28.8	42.8	81.0
Maximum temperature		1300º C					
Maximum continuous working temperature		1250º C				1300º C	
Temperature sensor		Type 'R'					
Maximum power rating (kW)		2.5	3.5	7.0	8.0	9.0	15.0
Power control		Solid State Relay					
Over temperature protection		Optional Extra					
Insulation material		High Quality Low Thermal Mass Materials					
Electrical supply - 208/230 V - 60Hz		1 ph	1 ph	1 ph	1.ph	3 ph	3 ph
Chimney		Optional Extra					

Economy Furnace 1100º C

An economy range of furnaces for general use with simple to use functions and robust construction, offering the same safe, attractive, efficient qualities as the rest of the Vecstar range.

Model		ECF 2	ECF 3
Chamber size - mm	H	120	120
	W	180	180
	D	180	355
External size - mm	H	530	530
	W	470	470
	D	470	630
Volume (Litres)		3.9	7.7
Maximum temperature		1100º C	1100º C
Maximum continuous working temp		1100º C	1100º C
Temperature sensor		Type 'K'	
Max power rating (kW)		2.0	3.0
Insulation material		High quality low thermal mass materials	
Chimney		Stainless steel	

- Maximum operating temperature of 1100ºC
- Wire round ceramic muffle chamber for excellent temperature uniformity and smooth durable inner surface.
- Door opens sideways to ensure the hot plug is away from the operator at all times.
- Door safety switch turns off power to the elements whenever the door is opened.
- Three Term PID user friendly digital controller
- Single phase power source.
- High quality insulation incorporating a double skin case ensuring low outer surface temperatures.
- Stainless Steel chimney for venting excess fumes.
- Powder coating finish.
- Optional 24 hour / 7 day timer.

Ashing Furnace 1200º C

Two popular sizes designed to give the correct amount of air flow to achieve complete combustion.

- Wire wound ceramic muffle chamber for excellent uniformity and smooth durable inner surface
- Door opens vertically to ensure the hot plug is away from the operator at all times
- Door safety switch turns off power to the elements whenever the door is opened.
- Choice of digital controller (see separate information)
- Single phase power source
- High quality insulation incorporating a double skin case ensuring low outer surface temperatures
- Stainless Steel chimney
- Powder coating finish
- Typical uses: general laboratory use, e.g. education authorities, research institutes

Ashing Furnace

Model		AF 1	AF 2
Chamber size - mm	H	90	90
	W	180	180
	D	355	455
External size - mm	H	595	595
	W	455	455
	D	550	650
Volume (Litres)		5.7	7.2
Maximum temperature		1200º C	1200º C
Maximum continuous working temperature		1150º C	1150º C
Temperature sensor		Type 'K'	
Maximum power rating (kW)		3.0	3.9
Power control		Solid state relay	
Over temperature protection		Thermal fuse standard	
Insulation material		Mixture of low thermal mass & refractory brick	
Chimney		Standard	
Eurotherm controller		2116, 2416, 2408	

Tube Furnaces

A complete range of high quality tube furnaces including:

VTF 1-9 type offering 1, 2 or 4 tube options up to 1600ºC

VCTF 1-7 are single tube cylindrical furnaces available in horizontal format up to 1200ºC.

- Choice of digital controller (See separate information).
- Heating is via resistence wire elements on the VCTF range and silicon carbide rod elements on the VTF range.
- Single phase power source.
- A blend of high grade low thermal mass insulation and a double skin case design ensures low outer surface temperatures.
- Powder coating finish.
- Stand for both horizontal and vertical use.
- Typical uses: Analytical Research, Educational Authorities, Chemical Analysis.
- Ceramic work tubes, three zone furnaces and stainless steel gas tight ends are available on request.

Tube Furnaces (continued)

Model	Max Temp	Max Cont. Working Temp.	Work Tube Bore (mm)	Heated Length (mm)	Extended Dimensions (mm)			Number of Tubes	Power (kW)	T/C Type
					Height	Width	Depth			
VTF1	1200° C	1150° C	NOTE 1	150	560	400	340	1	1.5	K
VTF2	1200° C	1150° C	NOTE 1	150	560	400	340	2	1.5	K
VTF3	1200° C	1150° C	NOTE 1	150	560	400	340	4	1.5	K
VTF4	1400° C	1400° C	NOTE 1	150	710	470	410	1	2.25	R
VTF5	1400° C	1400° C	NOTE 1	150	710	470	470	2	2.25	R
VTF6	1400° C	1400° C	NOTE 1	150	780	470	470	4	2.25	R
VTF7	1600° C	1600° C	NOTE 1	150	550	520	460	1	3.5	R
VTF8	1600° C	1600° C	NOTE 1	150	770	520	520	2	3.5	R
VTF9	1600° C	1600° C	NOTE 1	150	830	520	520	4	3.5	R
VCTF1	1200° C	1150° C	15	130	430	310	180	1	0.4	K
VCTF2	1200° C	1150° C	25	240	550	310	280	1	2.0	K
VCTF3	1200° C	1150° C	38	370	550	310	410	1	2.25	K
VCTF4	1200° C	1150° C	50	490	550	310	530	1	2.5	K
VCTF5	1200° C	1150° C	65	640	550	310	680	1	3.0	K
VCTF6	1200° C	1150° C	75	740	550	310	780	1	3.5	K
VCTF7	1200° C	1150° C	100	990	550	310	1030	1	4.5	K

Heat Treatment 1200ºC Chamber Furnaces

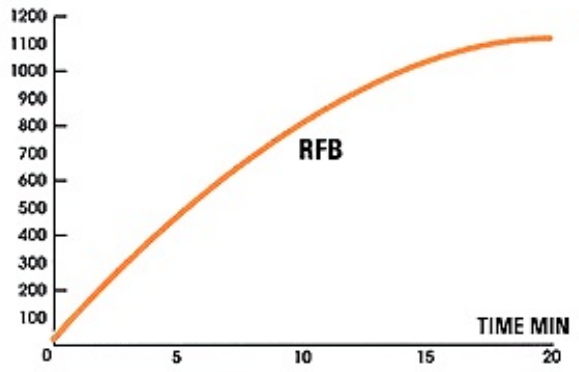
A complete range of high quality chamber furnaces for heat treatment and light industrial applications. A wide choice of chamber furnaces 1300ºC chamber volumes are available and a choice of optional extras can be incorporated to meet most functions.

- High quality resistance wire elements mounted horizontally in the sides and the roof chamber. This open spiral element design provides excellent temperature uniformity throughout the work chamber.
- Door opens vertically to ensure the hot plug is away from the operator at all times.
- Door safety switch turnes off power to the elements whenever the door is opened.
- Choice of digital controller (See seperate sheet).
- Single phase power source.
- A blend of high grade low thermal mass insulation, hard wearing refractory brick and double skin case design, combine to produce a safe cool outer case.
- Quench tank and table Stainless Steel liners and Retorts available on request.
- Powder coating finish.
- Typical users: General Laboratory, Education Authorities, Research Institutes

Model		TRF 1	TRF 2	TRF 3
Chamber size - mm	H	140	200	300
	W	180	230	300
	D	300	275	450
External size - mm	H	625	695	820
	W	560	604	752
	D	490	565	640
Volume (Litres)		7.5	17.0	40.5
Maximum temperature		1200º C	1200º C	1200º C
Maximum continuous working temperature		1150º C	1150º C	1150º C
Temperature sensor		Type 'R'		
Maximum power rating (kW)		3.0	5.0	7.0
Power control		Solid state relay		
Over temperature protection		Thermal fuse standard		
Insulation material		High quality low thermal mass materials		
Chimney		Optional extra		

Rapid Heat Furnaces 1200ºC

A range of newly designed chamber furnaces in three popular sizes, designed to give very rapid heat up times and close control at setpoint.



- Free radiating high quality resistance wire elements giving rapid heat up times & excellent temperature uniformity throughout the chamber.
- Door opens up & over ensuring that the hot insulation door plug is away from the operator at all times.
- Door safety switch turns off power to the elements whenever the door is opened.
- Choice of digital controller (See separate information).
- Single phase power source.
- High quality insulation incorporating a double skin ensuring low outer surface temperatures.
- Powder coating finish.
- Typical uses: General Laboratory use: Education Authorities, Research Institutes.

Model		RFB 1	RFB 2	RFB 3
Chamber size - mm	H	140	165	200
	W	150	190	230
	D	165	235	290
External size - mm	H	533	588	593
	W	402	422	482
	D	340	410	465
Volume (Litres)		3.4	7.3	13.3
Maximum temperature		1200º C	1200º C	1200º C
Maximum continuous working temperature		1150º C	1150º C	1150º C
Temperature sensor		Type 'K'		
Maximum power rating (kW)		2.5	4.0	8.0
Power control		Solid state relay		
Over temperature protection		Thermal fuse standard		
Insulation material		High quality low thermal mass materials		
Chimney		Standard		

Controller Specifications

Temperature Control Systems

EUROTHERM 2116 CONTROLLER

This 48 X 48mm unit offers a single adjustable ramp to one permanent dwell temperature. This feature is useful for gentle heating of ceramic work tubes or samples and can limit the cooldown rate when the temperature is reduced. Both the set temperature and the actual measured furnace temperature are simultaneously displayed.

EUROTHERM 2416 CG PROGRAMMER

This 48 x 48mm unit adds to the features of the 2116 alowing you to preset both the rate of temperature rise or fall, and the length of time at a constant temperature. A total of 8 segments each of which can be used as a ramp, step or dwell.

Temperature Control Systems (Continued)

EUROTHERM 2408 CP PROGRAMMER

This 48 x 96mm, high stability instrument extends the features of the 2146 and allows you to preset programmes of 16 segments, each of which can be used as a ramp, step or dwell.

OTHER PROGRAMMERS

Eurotherm 2408 P4 and 2408cm as the 2408 CP but facility to store 4 or 20 programmes each of 16 segments

Please note many other systems are available, please contact our design team for more information.

Optional Extras

OVERTEMPERATURE PROTECTION

An independent over temperature protection system to give protection for both the furnace or any furnace contents at any temperature. Using an additional Eurotherm alarm working from a separate thermocouple.

DIGITAL COMMUNICATIONS

RS232 allowing a single controller to communicate with a computer .

RS485 Allowing multiple controllers to communicate by "Daisy-chaining"

SOFTWARE

DOS or Windows software is available

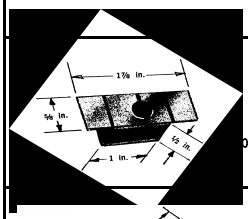
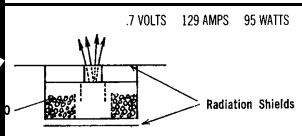
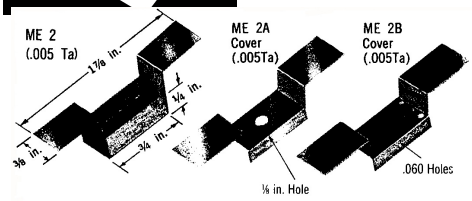
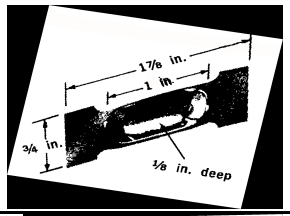
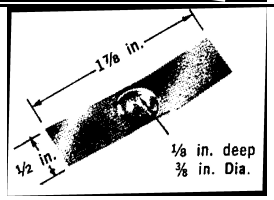
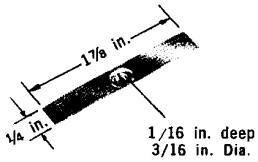
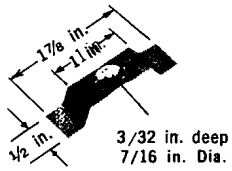
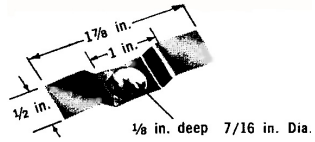
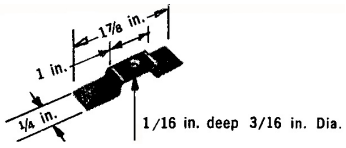
CASCADE CONTROL

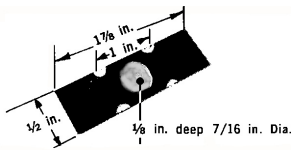
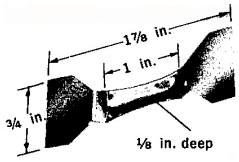
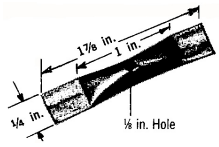
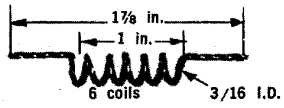
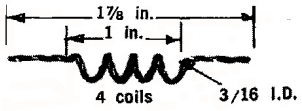
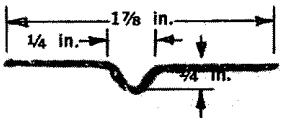
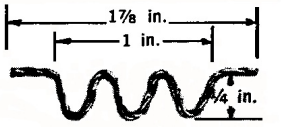
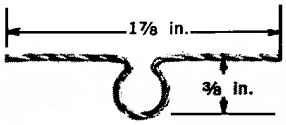
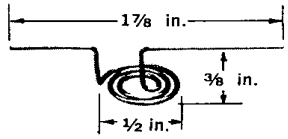
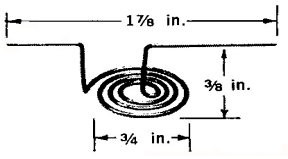
Available when close monitoring of the work load is important an additional thermocouple is placed close to the load and a second controller is fitted. The thermocouple sends signals to the normal temperature controller which in turn adjusts the element temperature.

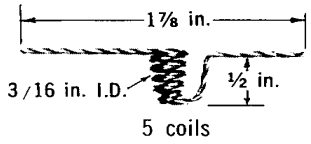
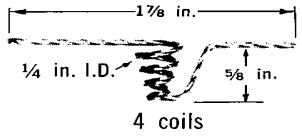
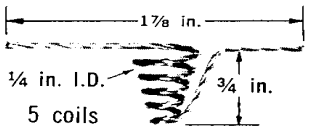
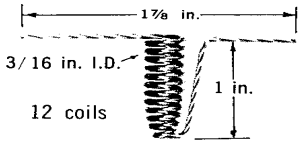
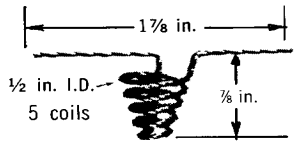
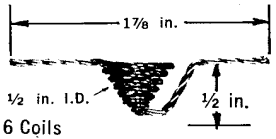
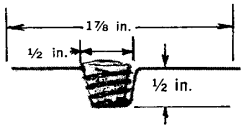
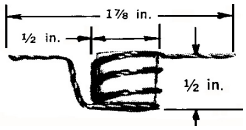
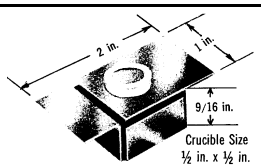
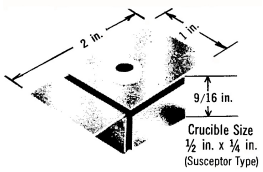
CHART RECORDERS

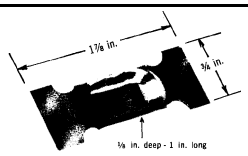
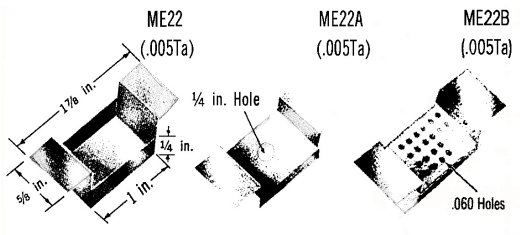
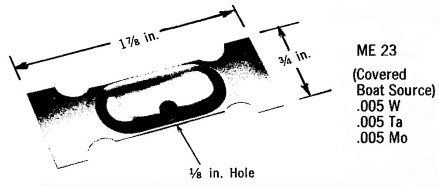
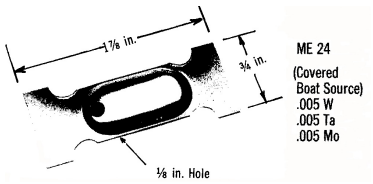
A wide selection of both analogue and graphic recorders are available on request.

Micro Electronic Sources - Vacuum Evaporation Source Power Requirements & Price List

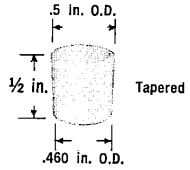
Detail	Part #	Material	Volts	Amps	Watts	Temp °C	Price ea. US $
 	ME1 Silicon Monoxide and Cadmium Sulfide Baffled Box Source. Capacity is approx. 2 grams	Ta	1.45	266	386	1600	$97
	ME2	.005Ta	2.52	141	355	1600	$19
	ME2A	cover Ta	1.74	176	306	1600	$15
	ME2B	cover Ta	1.74	176	306	1600	$18
	ME3W	.005 W	2.00	202	404	1800	$6
	ME3Ta	.005 Ta	1.77	138	244	1600	$17
	ME3Mo	.005 Mo	.94	150	141	1400	$5
	ME3-AO-Mo	Al_2O_3 coated	.86	151	130	1200	$10
	ME4W	.005 W	1.83	143	262	1800	$4
	ME4Ta	.005 Ta	1.50	98	147	1600	$11
	ME4Mo	.005 Mo	.94	93	87	1400	$3
	ME4-AO-Mo	Al_2O_3 coated	.83	116	96	1200	$8
	ME5W	.005 W	1.69	80	135	1800	$3
	ME5Ta	.005 Ta	1.40	55	77	1600	$6
	ME5Mo	.005 Mo	.85	102	87	1400	$3
	ME6AW	.005 W	1.83	145	265	1800	$5
	ME6ATa	.005 Ta	1.85	95	176	1600	$13
	ME6AMo	.005 Mo	.85	102	87	1400	$4
	ME6BW	.005 W	1.88	144	271	1800	$5
	ME6BTa	.005 Ta	1.73	96	166	1600	$13
	ME6BMo	.005 Mo	.90	97	87	1400	$4
	ME6B-AO-Mo	Al_2O_3 coated	.84	106	89	1200	$8
	ME7W	.005 W	2.03	76	154	1800	$4
	ME7Ta	.005 Ta	1.72	49	84	1600	$8
	ME7Mo	.005 Mo	1.12	53	59	1400	$3

Detail	Part #	Material	Volts	Amps	Watts	Temp ºC	Price ea. US $
	ME8W	.005 W	2.57	129	332	1800	$5
	ME8Ta	.005 Ta	2.16	93	201	1600	$12
	ME8Mo	.005 Mo	1.04	79	82	1400	$3
	ME9W	.005 W	1.55	97	150	1800	$6
	ME9Ta	.005 Ta	1.48	67	99	1600	$18
	ME9Mo	.005 Mo	.80	72	58	1400	$5
	ME9-AO-Mo	Al_2O_3 coated	.80	83	66	1200	$10
	ME10Ta	.005 Ta	1.07	131	140	1600	$26
	ME11W	.030 W	3.59	25	90	1800	$2
	ME11-3xW	3x.025 W	3.13	44	138	1800	$2
	ME12W	.030 W	2.47	27	67	1800	$2
	ME12-3xW	3x.025 W	2.30	47	108	1800	$2
	ME13AW	.030 W	1.25	33	41	1800	$2
	ME13A-3xW	3x.025 W	1.08	61	66	1800	$2
	ME13BW	.030 W	1.95	27	53	1800	$ 2.20
	ME13B-3xW	3x.025 W	1.68	52	87	1800	$ 2.60
	ME13CW	.030 W	1.95	26	51	1800	$ 2.00
	ME13C-3xW	3x.025 W	1.56	53	83	1800	$ 2.40
	ME14-3W	.030 W	3.21	24	77	1800	$ 5.80
	ME14-4W	.040 W	2.90	36	104	1800	$ 6.20
	ME15-3W	.030 W	4.18	23	96	1800	$ 6.00
	ME15-4W	.040 W	3.63	34	123	1800	$ 6.40

Detail	Part #	Material	Volts	Amps	Watts	Temp ºC	Price ea. US $
	ME16A-3W	.030 W	2.48	23	57	1800	$ 1.80
	ME16A-3xW	3x.025 W	2.30	39	90	1800	$ 2.20
	ME16B-3W	.030 W	2.90	23	67	1800	$ 2.40
	ME16B-3xW	3x.025 W	2.66	42	112	1800	$ 2.60
	ME16C-3W	.030 W	3.77	23	87	1800	$ 2.60
	ME16C-3xW	3x.025 W	3.54	43	152	1800	$ 2.80
	ME16D-3W	.030 W	5.96	21	125	1800	$ 2.20
	ME16D-3xW	3x.025 W	5.51	40	220	1800	$ 3.00
	ME16E-4W	.040 W	4.25	32	136	1800	$ 2.80
	ME16E-3xW	3x.025 W	5.00	44	220	1800	$ 3.20
	ME17-3W	.030 W	4.93	22	108	1800	$ 2.60
	ME17-3xW	3x.025 W	4.57	40	183	1800	$ 2.80
 Use with C1 Crucibles	ME18A-3xW	3x.025 W	6.56	48	315	1800	$ 2.80
	ME18A-3xW	3x.030 W	5.00	55	275	1800	$ 3.00
 Use with C9 Crucibles	ME18B-3xW	3x.025 W	4.70	43	202	1800	$ 2.80
	ME18B-3xW	3x.030 W	4.25	56	238	1800	$ 3.00
 Use with C1 and C9 Crucibles	ME19	Use crucible	1.23	242	298	1600	$ 97.00
 Use with C10 Crucible	ME20	Use crucible	1.12	159	178	1600	$ 97.00

Detail	Part #	Material	Volts	Amps	Watts	Temp ºC	Price ea. US $
	ME21W	.005 W	1.96	213	417	1800	$ 7.60
	ME21Ta	.005Ta	1.75	141	247	1600	$ 17.90
	ME21Mo	.005 Mo	.94	147	138	1400	$ 5.80
	ME22	.005Ta base	1.87	196	367	1600	$ 36.00
	ME22/22A	.005 Ta	1.45	265	384	1600	$ 26.00
	ME22/22B	.005 Ta	1.45	265	384	1600	$ 32.00
	ME22B-AOTa	Al_2O_3 coated	1.30	259	337	1200	$ 46.20
	ME22A-AOTa	Al_2O_3 coated	1.09	293	319	1200	$ 35.20
	ME23W	.005 W	1.40	327	458	1800	$ 12.80
	ME23Ta	.005Ta	1.51	215	325	1600	$ 28.20
	ME23Mo	.005 Mo	.79	251	198	1400	$ 12.00
	ME24W	.005 W	1.66	322	535	1800	$ 12.80
	ME24Ta	.005Ta	1.47	230	338	1600	$ 28.20
	ME24Mo	.005 Mo	.83	248	206	1400	$ 12.00

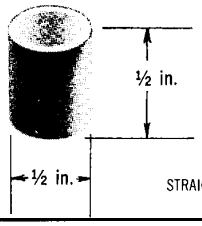
Crucibles for use with ME18A/B, ME19 and ME20 Box Sources



Wall thickness .030

		Part No.	Price US $
C1 - AO	Alumina Oxide		$ 15.65
C1 - Q	Quartz		$ 17.10
C1 - BN	Boron Nitride*		$ 26.10

Use with ME-18A & ME-19 Heater

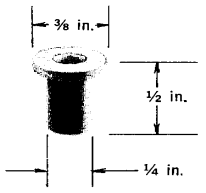


⅜ in. ID

Wall thickness .030

C9 - AO	Alumina Oxide	$ 15.65
C9 - Q	Quartz	$ 13.05
C9 - BN	Boron Nitride*	$ 26.10
C9 - Ta	Tantalum	$ 288.00
C9 - Mo	Molybdenum	$ 66.60
C9 - C	Carbon	$ 14.75

Use with ME18B & ME-19 Heater



$^5/_{32}$ in ID

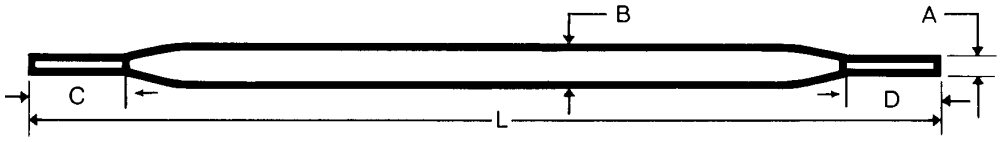
C10 - BN	Boron Nitride*	$ 15.85
C10 - C	Carbon	$ 12.60
C10 - Q	Quartz	$ 14.00
C10 - Ta	Tantalum	$ 243.00
C10 - Mo	Molybdenum	$ 62.00

Use with ME-20 Heater

Minimum order is $50.00. Prices are quoted in United States, FOB our Guelph warehouse, taxes are not included and will be charged extra as applicable. Terms are Net 30 days on approved credit. Delivery is typically from stock to 10 days.

Chrome Plated Tungsten Rods

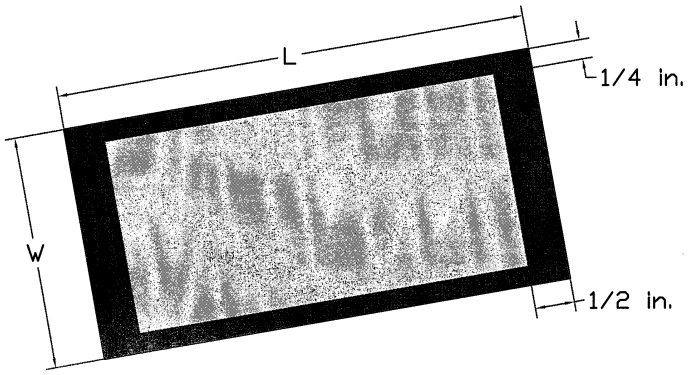
The chrome plated tungsten rods are used for thin films of chromium in the electronics and optics industry. The advantage over chrome chips are: good thermal efficiency; regulation of film thickness; and elimination of spalling.



The rods are offered in the below configuration as standards.

Part Number	C & D (Inches)	L (Inches)	A (Inches)	B (Inches)	Price US $
MCRW1	0.5	2	0.05	0.07	10.50
MCRW2	0.5	4	0.05	0.07	11.60
MCRW3	0.5	6	0.05	0.07	13.00

Tungsten Screen



Tantalum Frame

Tungsten Screen		
Part No.	**Sizes**	**Price US $**
TM1	2 in. X 3 in.	$ 88.80
TM1	2 in. X 4 in.	$ 97.60
TM1	3 in. X 4 in.	$ 115.60
TM1	4 in. X 4 in.	$ 133.40
TM1	3 in. X 6 in.	$ 153.40
TM-2	Tungsten screen material available without frame in random lengths x 6 inches wide.	$8.40 Per Inch.

Polyimide Tape & Film, Polyester Tape, Fibreglass Products

PMT Series - Polyimide Pressure-Sensitive Adhesive Tape

DESCRIPTION: (RoHS Compliant)

This tape consisting of a polyimide film and silicone adhesive designed for high temperature masking applications, including the protection of printed circuit board gold finger contacts during wave soldering, It's use in electrical insulation applications meets class H requirements.

MAIN PRODUCT FEATURES:

- Thin and conformable enabling masking of uneven surfaces
- Wide operating temperature range from up to 260ºC (500°F)
- Excellent electrical insulation
- Removes cleanly without adhesive residue after exposure to heat / chemicals.

TECHNICAL DATA	PMT01	PMT02	PMT05
Colour	Amber	Amber	Amber
Adhesive Type	Silicone	Silicone	Silicone
Backing Thickness (mils)	1	2	5
Adhesive Thickness (mils)	1.5	1.5	1.5
Total Tape Thickness (mils)	2.5	3.5	6.5
Adhesion to Steel, (oz/inch)	25	25	30
Tensile Strength (lbs/inch)	30	50	98
Elongation, %	>55	60	65
Dielectric Strength, Volts	6500	11,000	22,000
Insulation Resistance, Mohms	1×10^6	1×10^6	1×10^6
Electrolytic Corrosion Factor	1	1	1
Insulation Class, ºC	180º	180º	180º
Temperature Resistance	260ºC (500ºF)	260ºC (500ºF)	260ºC (500ºF)
Resistance to acids, oils solvents	Excellent	Excellent	Excellent

Ordering Information:

Part No. PMT01-xxx (xxx is width of roll in 0.1mm increments) All rolls are 33 Metres long, (108 feet)

Part No. PMT-01	032	063	095	127	159	191	222	254	381	445	508	762
Size, width	3.2mm	6.35mm	9.5mm	12.7mm	15.9mm	19.1mm	22.2mm	25.4mm	38.1mm	44.5mm	50.8mm	76.2mm
Price per roll	$6.40	$6.50	$8.75	$11.80	$14.10	$16.20	$18.50	$18.90	$27.70	$32.40	$36.30	$53.70
Rolls per case	72	36	24	18	15	12	12	12	6	6	6	4
Price per case	$315.00	$166.00	$147.00	$137.00	$144.00	$135.00	$150.00	$166.00	$122.00	$150.00	$159.00	$157.00

Prices are quoted in US Dollars, FOB our Guelph Warehouse. Taxes extra as applicable, Net 30 days on approved credit.

Polyester Film with Silicone Adhesive

Electrical Tape for use at Cryogenic Temperatures

Manufactured from polyester film with silicone pressure sensitive adhesive.

- Excellent tape for use at cryogenic temperatures
- Will not degrade with time like masking tape
- Yellow polyester film

Ordering Information:

LST3M-72 1 roll cryogenic tape 12.7mm x 65.8 m (0.5 in x 72 yd)

Price: **US $23.00 per roll**

Specifications:

Backing:	Polyester film
Temperature class:	403K (130ºC)
Total thickness:	0.064mm (0.0025in)
Dielectric strength:	5,000 Volts
Insulation resistance:	> 1Mohm
Breaking strength:	55N (12.5 lb)
Elongation:	100% at break